Week 07 Term 1 2024



Learning Brief SM3



By the end of this unit, students will:

- understand the concepts and techniques in vectors, complex numbers, functions and graph sketching
- apply reasoning skills and solve problems in vectors, complex numbers, functions and graph sketching
- communicate their arguments and strategies when solving problems

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Engage | Inspire | Achieve

- construct proofs of results
- interpret mathematical information and ascertain the reasonableness of their solutions to problems.
- This week: Sketching graphs:
 - use and apply the notation |x| for the absolute value for the real number x and the graph of y = |x|
 - examine the relationship between the graph of y = f(x) and the graphs of $y = \frac{1}{f(x)}$, y = |f(x)| and y = f(|x|)
 - sketch the graphs of simple rational functions where the numerator and denominator are polynomials of low degree.

Theoretical Components

Focus:

Graphing and applications of Rational Functions.

Practical Components

Check Google Classroom WK07 folder:

Attempt all the questions 57-64, 75-79, 82.

Reminder: Problem-Solving Task (In-Class) is in WK08.

Review: <u>Hole</u> in a Graph

Checklist:

- Find the domains of rational functions.
- Find horizontal and vertical asymptotes of graphs of rational functions.
- Find holes and Oblique Asymptotes
- Determine the equation given the graph of rational function
- Use rational functions to model and solve real-life problems.

Investigation

See the next page.

20 marks – see rubric.

Q/F/O Quiz/Forum/Other RF in Medicine: <u>https://www.youtube.com/watch?v=7e6kU_qfZRE</u>



Investigation

The ordering and transportation cost (in thousands of dollars) for the components used in manufacturing the GTR badge is given by

$$C = 100\left(\frac{200}{n^2} + \frac{x}{n+30}\right), n \ge 1$$

Where n is the order size (in hundreds). Use a graphing utility to graph the cost function. From the graph, estimate the order size that minimizes cost.

Check your answer using an analytical method you have studied in SM or SMM.